

What is claimed is:

1. A hollow spinal spacer for engagement between vertebrae, comprising:
  - an anterior wall having a convexly curved anterior surface and opposite ends;
  - a posterior wall having a flat posterior surface and opposite ends;
  - two lateral walls, each integrally connected between said opposite ends of said anterior and posterior walls to define a chamber; and
  - said walls further defining:
    - a superior vertebral engaging face defining a first opening, said opening in communication with said chamber; and
    - an opposite vertebral engaging inferior face defining a second opening, said second opening in communication with said chamber.
2. The spacer of claim 1, further comprising an osteoinductive material contained within said chamber.
3. The spacer of claim 2 wherein said osteoinductive material is autograft.
4. The spacer of claim 2 wherein said osteoinductive material is a bioceramic.
5. The spacer of claim 4 wherein said bioceramic is a biphasic calcium phosphate ceramic.
6. The spacer of claim 2 wherein said osteoinductive material includes a bone morphogenic protein in a carrier.
7. The spacer of claim 6 wherein said bone morphogenic protein is selected from the group consisting of BMP-1, BMP-2, BMP-3, BMP-4, BMP-5, BMP-6, BMP-6, BMP-7, BMP-8, BMP-9, BMP-10, BMP-11, BMP-12 and BMP-13.

8. The spacer of claim 7 wherein said bone morphogenic protein is BMP-2.

9. The spacer of claim 8 further comprising BMP-7.

10. The spacer of claim 6 wherein said carrier is selected from the group consisting of calcium sulfate, polylactic acids, polyanhydrides, collagen, calcium phosphate ceramics and polymeric acrylic esters.

11. The spacer of claim 10 wherein said carrier is an open-porosity polylactic acid polymer.

12. The spacer of claim 10 wherein said carrier includes collagen.

13. The spacer of claim 12 wherein said carrier is fibrillar collagen.

14. The spacer of claim 12 wherein said carrier is a collagen sponge.

15. The spacer of claim 10 wherein said carrier is provided in strips folded to conform to said chamber.

16. The spacer of claim 10 wherein said carrier is provided in sheets folded to conform to said chamber.

17. The spacer of claim 10, further comprising an osteoconductive material contained within said chamber.

18. The spacer of claim 17 wherein said osteoconductive material is allograft.

19. The spacer of claim 10 wherein said anterior wall defines a thru-hole configured for receiving an implanting tool.

20. The spacer of claim 10 wherein said superior face and said inferior face each define a roughened surface adapted to provide a friction fit with bone.

21. The spacer of claim 10, wherein each said lateral wall has an external surface and further comprising a lateral wing projecting from said external surface of each said lateral wall, each said wing disposed between said inferior and superior faces.

22. The spacer of claim 10, further comprising a first pair of blades extending from said superior face and a pair of second blades extending from said inferior face, said blades each having a cutting edge configured to pierce a vertebral end-plate.

23. A hollow spinal spacer for engagement between vertebrae, comprising:

an anterior wall having opposite ends and defining an anterior superior surface and an anterior inferior surface,

said anterior superior surface having a concave shape defining a first radius, said first radius configured to correspond to the anterior shape of an inferior vertebral end-plate, and

said anterior inferior surface having a convex shape defining a second radius, said second radius configured to correspond to the anterior shape of a superior vertebral end-plate;

a posterior wall having opposite ends and defining a posterior superior surface and a posterior inferior surface;

two lateral walls, each integrally connected between said opposite ends of said anterior and posterior walls to define a chamber, each said lateral wall defining a lateral superior surface and a lateral inferior surface;

a superior vertebral engaging face including said anterior superior surface, said posterior superior surface and said lateral superior surfaces, said superior face defining a first opening in communication with said chamber; and

an opposite inferior vertebral engaging face including said anterior inferior surface, said posterior inferior surface and said lateral inferior surfaces, said inferior face defining a second opening in communication with said chamber.

24. The spacer of claim 23 wherein said walls and said faces are composed of a biocompatible composite including a rigid foam carbonaceous material and a thin film of metallic material deposited onto said carbonaceous material.

25. The spacer of claim 23 wherein said first radius is between about 0.500" and about 1.250" and said second radius is between about 0.500" and about 1.250".

26. The spacer of claim 25 wherein both said first and second radii are about 0.750.

27. The spacer of claim 23 wherein:

said posterior superior surface has a concave shape defining a third radius, said third radius configured to correspond to the posterior shape of an inferior vertebral end-plate; and

said posterior inferior surface has a convex shape defining a fourth radius, said fourth radius configured to correspond to the posterior shape of a superior vertebral end-plate.

28. The spacer of claim 27 wherein said third radius is between about 0.500" and about 1.250" and said fourth radius is between about 0.500" and about 1.250".

29. The spacer of claim 28 wherein both said first and second radii are about 0.750.

30. The spacer of claim 23 wherein said anterior wall defines a thru-hole for receiving an implanting tool.

31. The spacer of claim 23 wherein said anterior wall has a convexly curved anterior surface.

32. The spacer of claim 31 wherein said posterior wall has a flat posterior surface.

33. The spacer of claim 23, wherein:  
said lateral superior surface defines a superior radius configured to correspond to the inferior shape of a vertebral end-plate; and  
said lateral inferior surface defines an inferior radius configured to correspond to the superior shape of a vertebral end-plate.

34. The spacer of claim 23, wherein each said lateral wall includes an external surface and further comprising a lateral wing projecting from said external surface of each said lateral wall.

35. The spacer of claim 23, further comprising a first pair of blades extending from said superior face and a second pair of blades extending from said inferior face, said blades each having a cutting edge configured to pierce a vertebral end-plate.

36. A hollow spinal spacer for engagement between vertebrae, comprising:

an anterior wall having opposite ends and defining an anterior superior surface and an anterior inferior surface;

a posterior wall having opposite ends and defining a posterior superior surface and a posterior inferior surface;

two lateral walls, each integrally connected between said opposite ends of said anterior and posterior walls to define a chamber, each said lateral wall defining a convex lateral superior surface and a convex lateral inferior surface,

each said lateral superior surface defining a superior radius configured to correspond to the inferior shape of a vertebral end-plate;

each said lateral inferior surface defining an inferior radius configured to correspond to the superior shape of a vertebral end-plate;

a superior vertebral engaging face including said anterior superior surface, said posterior superior surface and said lateral superior surfaces, said superior face defining a first opening in communication with said chamber; and

an inferior vertebral engaging face including said anterior inferior surface, said posterior inferior surface and said lateral inferior surfaces, said inferior face having a second opening in communication with said chamber.

37. The spacer of claim 36 wherein said walls and said faces are composed of a biocompatible composite including a rigid foam carbonaceous material and a thin film of metallic material deposited onto said carbonaceous material.

38. The spacer of claim 36 wherein said superior radius is between about 0.500" and about 1.250" and said inferior radius is between about 0.500" and about 1.250".

39. The spacer of claim 38 wherein both said superior and inferior radii are each about 0.750.

40. The spacer of claim 36 wherein said anterior wall has a convexly curved anterior surface and said posterior wall has a flat posterior surface.

41. The spacer of claim 36 wherein said anterior wall defines a thru-hole for receiving an implanting tool.

42. A hollow spinal spacer for engagement between vertebrae, comprising:

an anterior wall having opposite ends;

a posterior wall having opposite ends;

two lateral walls each having an external surface and each integrally connected between said opposite ends of said

anterior and posterior walls to define a chamber;  
said walls further defining;

a superior vertebral engaging face defining a first  
opening in communication with said chamber;

an opposite inferior vertebral engaging face defining a  
second opening in communication with said chamber; and

a lateral wing projecting from said external surface of  
each said lateral wall, each said wing disposed between said  
inferior and superior faces.

43. The spacer of claim 42 wherein said walls and said  
faces are composed of a biocompatible composite including a  
rigid foam carbonaceous material and a thin film of metallic  
material deposited onto said carbonaceous material.

44. The spacer of claim 42 wherein each said wing  
extends from said anterior wall to said posterior wall.

45. The spacer of claim 44, further comprising a first  
pair of blades extending from said superior face and a second  
pair of blades extending from said inferior face, each said  
blade having a cutting edge configured to pierce a vertebral  
end-plate.

46. The spacer of claim 44, wherein:  
said superior face includes a pair of convex lateral  
superior surfaces defined by said lateral walls, said lateral  
superior surfaces each defining a superior radius configured  
to correspond to the inferior shape of a vertebral end-plate;  
and

    said inferior face includes a pair of convex lateral  
    inferior surfaces defined by said lateral walls, said lateral  
    inferior surfaces each defining an inferior radius configured  
    to correspond to the superior shape of a vertebral end-plate.

47. The spacer of claim 46, wherein:  
    said superior face includes an anterior superior surface  
    defined by said anterior wall, said anterior superior surface

having a concave shape defining a first radius, said first radius configured to correspond to the anterior shape of an inferior vertebral end-plate; and

    said inferior face includes an anterior inferior surface having a convex shape defining a second radius, said second radius configured to correspond to the anterior shape of a superior vertebral end-plate.

48. The spacer of claim 47, further comprising a first pair of blades extending from said superior face and a second pair of blades extending from said inferior face, said blades each having a cutting edge configured to pierce a vertebral end-plate.

49. A hollow spinal spacer for engagement between vertebrae, comprising:

    an anterior wall having opposite ends;

    a posterior wall having opposite ends;

    two lateral walls, each integrally connected between said opposite ends of said anterior and posterior walls to define a chamber;

    said walls further defining;

        a superior vertebral engaging face defining a first opening, said opening in communication with said chamber; and

        an opposite inferior vertebral engaging face defining a second opening, said second opening in communication with said chamber; and

    a first blade extending from one of said engaging faces, said blade having a cutting edge configured to pierce a vertebral end-plate.

50. The spacer of claim 49 wherein said walls and said faces are composed of a biocompatible composite including a rigid foam carbonaceous material and a thin film of metallic material deposited onto said carbonaceous material.

51. The spacer of claim 49 wherein said first blade extends from said superior face.

52. The spacer of claim 51, further comprising a second blade extending from said superior face, said second blade parallel to said first blade and having a cutting edge configured to pierce a vertebral end-plate.

53. The spacer of claim 52, further comprising a pair of inferior blades extending from said inferior face, each said inferior blade having a cutting edge configured to pierce a vertebral end-plate.

54. The spacer of claim 49, wherein said superior face includes a pair of lateral superior surfaces defined by each said lateral wall, said lateral superior surfaces having a convex shape and said inferior face includes a pair of lateral inferior surfaces defined by each said lateral wall, said lateral inferior surfaces having a convex shape.

55. The spacer of claim 54, wherein:  
said superior face includes an anterior superior surface defined by said anterior wall, said anterior superior surface having a concave shape defining a first radius; and  
said inferior face includes an anterior inferior surface defined by said anterior wall, said anterior inferior surface having a convex shape defining a second radius.

56. The spacer of claim 55 wherein said anterior wall has a convexly curved anterior surface and said posterior wall has a flat posterior surface.

57. The spacer of claim 56 wherein said anterior wall defines a thru-hole for receiving an implanting tool.